

Pharmacy Product System – National (PPS-N)

INSTALLATION GUIDE



Version 1.0

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Office of Information and Technology
Product Development**

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1 PROJECT SCOPE

1.1 Project Identification

Southwest Research Institute® (SwRI®) is producing this Pharmacy Product System (PPS) – National version of the Installation Guide under the controlling major Veterans Affairs (VA) Pharmacy Re-engineering (PRE) initiative. This effort is contracted under Veterans Health Administration (VHA) REDACTED

Project Title:	Pharmacy Product System – National Version 1.0
Project Number:	REDACTED
Abbreviation:	PPS-N

1.2 Project Description

Pharmacy applications and systems are some of the oldest technologies in the Veterans Health Information Systems and Technology Architecture (VistA) system. The Veterans Health Administration (VHA) has identified system limitations and cumbersome, inconsistent pharmacy processes as a weakness in its ability to provide efficient pharmaceutical services across the VHA continuum. In 2001, First Consulting Group, an external contractor, conducted a functionality assessment of pharmacy applications and operations to determine the viability of maintaining the status quo of current technology supporting VHA Pharmacy operations, taking into account agency goals and priorities. This analysis, presented in the Final Report of the Veterans Affairs (VA) Pharmacy Application Assessment Project (dated July 20, 2001), identified several fundamental problems with the current system and recommended that VHA Pharmacy Systems technology and operational processes change from a dispensing and labeling focus to a patient-centric care focus. A proposal to proceed with the VHA Pharmacy Re-Engineering (PRE) project was presented to VHA and subsequently approved on April 16, 2002.

The Future Business Process Model (FBPM), published in September 2004, presents the overall operational concept for the pharmacy processes which the overall PRE project supports. The design of the operational concept presented in the FBPM focuses on achieving an enterprise-wide patient-centric pharmacy care system. The operational concept includes:

- ✓ Integrating Inpatient and Outpatient Pharmacy Care – This results in a single, combined view of a patient’s healthcare. The combined view provides the caregiver with quick access to pertinent information about a patient’s outpatient and inpatient medications.
- ✓ Integrating On-Site and Off-Site Pharmacy Care – This addresses a new capability to access and incorporate pertinent healthcare information from VHA and non-VHA healthcare facilities, providing the caregiver a complete picture of the Patient’s Medication Profile.
- ✓ Integrating Pharmacy into the Patient Care Team – This specifically addresses the vision of fully integrating pharmacy operations with the various other operations dealing with patient care, such as order entry, administration, and clinical monitoring.

- ✓ Integrating Inventory and Supply Management in Patient Healthcare – This incorporates inventory and supply concepts (e.g., par levels, reorder points, usage data, forecasting) to ensure that required medical supplies are available in the right form, at the right time, and in the right place.
- ✓ Integrating Process Management into Patient Healthcare – This provides the capability to assess the status of pharmacy operations and to make improvements continuously based on evidence garnered throughout the pharmacy processes.

Implementing the operational concept outlined above will help transform the current pharmacy from a supply-fill-deliver organization to a *OneVA* pharmacy (providing world-class service to Veterans and their families through the effective management of people, technology, process, and financial resources) that is a valued member of the VHA's patient-care team. PRE Project Goals and Objectives

The objective of the PRE project is to facilitate the improvement of pharmacy operations, customer service, and patient safety for the VHA. The PRE project will help address the identified goals and vision for the VHA Pharmacy System.

The goal for the overall PRE project is a seamless and integrated nationally supported system that is an integral part of the HealthVet-VistA environment. To meet this goal, the PRE project will enhance pharmacy data exchange, as well as clinical documentation capabilities, in a truly integrated fashion to improve operating efficiency and patient safety. Additionally, it will provide a flexible technical environment to adjust to future business conditions and to meet patient needs in the clinical environment. Achieving this goal will enable resolution of current pharmacy issues, improve patient safety, and facilitate long-term process stability.

1.3 PRE Project Goals and Objectives

The objective of the PRE project is to facilitate the improvement of pharmacy operations, customer service, and patient safety for the VHA. The PRE project will help address the identified goals and vision for the VHA Pharmacy System.

The goal for the overall PRE project is a seamless and integrated nationally supported system that is an integral part of the new VA SOA environment. To meet this goal, the PRE project will enhance pharmacy data exchange, as well as clinical documentation capabilities, in a truly integrated fashion to improve operating efficiency and patient safety. Additionally, it will provide a flexible technical environment to adjust to future business conditions and to meet patient needs in the clinical environment. Achieving this goal will enable resolution of current pharmacy issues, improve patient safety, and facilitate long-term process stability.

The PRE project has been broken down in multiple projects. Previous phases of PRE have concentrated on order checks (MOCHA) automated updates (DATUP) and customizing the drug interactions (PECS). The Pharmacy Product System – National (PPS-N) and the Pharmacy Product System – National Migration (PPS-N Migration) projects are the two projects that are covered by this Installation Guide. This guide will cover the installation of the scripts, VistA Patches and Java artifacts and configurations necessary to run the PPS-N applications. This includes configurations for accessing the Federal Supply Schedule (FSS), The Veterans Enterprise Terminology Service (VETS) and the First Database Drug Information Framework (FDB-DIF) data repository.

2 DOCUMENT OVERVIEW

The information contained in this PPS-N Installation Guide applies to the PPS-N Version 1.0 code drop PPS-N Data Migration and PPS-N V1.0. This section defines the layout of this document and provides an outline of the document structure.

The purpose of this Installation Guide (IG) is to define the pre-requisites for the PPS-N application to function, the artifacts that must be deployed and the configuration of those artifacts. The deployable artifacts associated with this project will be the PPS-N Enterprise Product List (EPL), the PPS-N deployable Enterprise Archive (EAR) file and the [Massachusetts General Hospital](#) Utility Multi-Programming System (MUMPS) patches that will be deployed on the NDF MS system. Additionally, the documentation associated with this project will discuss the interfaces to the NDF MS system, the interfaces to the FDB-DIF, the interface to the VETS system and the methodology for connecting to the FSS database. The coding for the NDF MS system and FDB-DIF interfaces will be done by the contractor. The VETS system will be maintained by VETS personnel and the FSS database will be maintained by FSS personnel.

2.1 Document Background

This document details the steps required to install and configure the PPS-N v1.0 software, the terminology used for the configuration and deployment of the software, and the assumptions for installing the software. Additionally, this document details how to install and configure the database environment. The PPS-N v1.0 Version Description Document is delivered as a companion document to this Installation Guide. Refer to the Version Description Document for more information on the software inventory and versions utilized in this delivery.

2.2 Overview

The following list provides a brief description of the sections included in this document:

- Section 1: Provides introductory material delineating the purpose of the PRE Initiative and the PPS projects.
- Section 2: Presents an overview of the document
- Section 3: Presents the installation instructions for PPS-N.
- Section 4: Presents functionality tests to confirm that the installation was successful

Text in a `Courier New` font indicates text, commands, or settings that must be typed, executed, or configured to complete the installation.

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3 INSTALLATION INSTRUCTIONS

The following sections detail the steps required to install the PPS-N software. Section 3.1 details the terminology used for the configuration and deployment of the software. Section 3.2 outlines the assumptions for installing the software. While the system may be configured to run outside the given assumptions, doing so requires modifications that are not detailed in this document. Section 3.3 describes how to install and configure the Oracle databases. Section 3.4 describes installation and configuration of the VistA patches. Finally, Section 3.5 describes how to install and configure the PPS-N software in WebLogic.

In order to understand the installation and verification process, the reader should be familiar with the WebLogic console shown in Figure 3-1. The WebLogic console is a Web page viewable from any Internet browser; however, Internet Explorer, Version 9, is recommended. The WebLogic console is generally divided into two columns. The left column contains the Change Center, the Domain Structure, and other informational panels. The right column displays panels containing additional options or configuration details.

Note: With the exception of the Change Center and Domain Structure, all WebLogic console panels shown in the figures contained in this document are found in the right column of the WebLogic console. Whenever examples are given with the text, “For example,” the given value may be different depending on the specific server configuration. When the text, “For example,” is not provided, the text supplied must be entered exactly as specified for the PPS-N application to operate properly.

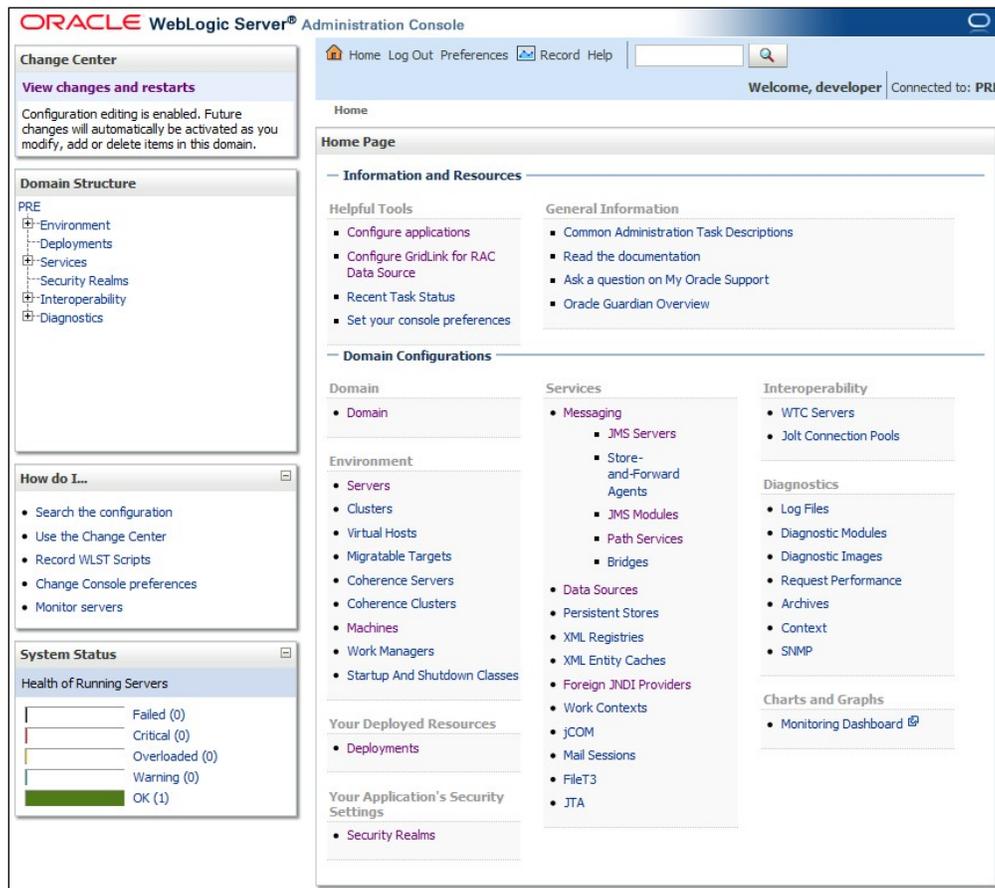


Figure 3-1. WebLogic Console

3.1 Terminology

In an effort to make these installation instructions as general as possible for installation at any site, a few terms are used throughout the installation instructions with the intent that they be replaced with site-specific values. Table 3-1 contains a list of those terms used only within this document as well as **sample** site-specific values for each term.

Table 3-1. Terminology

Term	Definition	Sample
Database Server	Machine on which Oracle is installed and runs	PPS-N-DB
Deployment Server	WebLogic managed server where PPS-N is deployed	NationalPharmacyServer
Deployment Server Port	Port on which the Deployment Server is listening	8021
Deployment Server class path directory	Folder location on the Deployment Server where libraries on the class path are located (see WebLogic documentation for instructions on setting a WebLogic managed server class path)	/opt/oracle/middleware/domains/PRE/lib
Java Database Connectivity (JDBC) Universal Resource Locator (URL)	URL to connect to Oracle database	jdbc:Oracle://pps-n-DB:1521/FDB_DIF

3.2 Assumptions

Hardware specifications for PPS-N are found in the PPS-N v1.0 Version Description Document which is delivered as a companion document to this Installation Guide.

The installation instructions found within this guide are intended to be performed on a clean installation of WebLogic 10.3.2 (10.3.5 is the latest as of July 2011), with a separate managed server to act as the Deployment Server. For details on completing the installation of the following items, please refer to each item's installation and configuration documentation for WebLogic supplied by Oracle.

For successful deployment of the PPS-N software at a site, the following assumptions must be met:

- The Deployment Server is configured and running via the WebLogic Node Manager.
- WebLogic is configured to run with the Java Standard Edition Development Kit, Version 1.6.0_16 (or better).
- Access to the WebLogic console is by means of any valid administrative user name and password.
- Oracle 11g database driver libraries are present on the class path for the respective Deployment Servers.
- Red Hat Enterprise Linux is properly installed.
- Installation instructions are followed in the order presented within this Installation Guide.

3.3 Database Tier Installation

This section describes the operating system and software for the PPS-N Database Tier installation and configuration. Initially, install and configure the operating system and software according to the manufacturer's specifications. Then configure as specified in Section 3.3.1 through Section 3.3.2 for PPS- to function properly. An Oracle database is implemented at the national level. **The installation instructions in Section 3.3.1 should be carried out by a qualified individual, such as a certified Database Administrator (DBA).**

3.3.1 Oracle Database (National)

The National PPS-N EPL is designed to be operating system independent but these installation instructions have been tested only on the Red Hat Linux operating system. Oracle 11g Enterprise Edition Release 11.2.0.*n* – Production must be properly installed and configured. The following sections describe the installation, features, user creation, and configuration for the Oracle database.

3.3.1.1 Oracle Installation

A proper installation of the Oracle Relational Database Management System (RDBMS) is one in which the Oracle Universal Installer was used to perform an error-free installation and a general purpose instance was created. A properly configured Oracle RDBMS is one in which the associated Oracle application development and configuration tools, namely SQL*Plus and Oracle Enterprise Manager, can be used to connect to the instance through Transparent Network Substrate alias.

3.3.1.2 Oracle Components

During the installation of Oracle, described in the *Oracle 11g Quick Installation Guide*, several components are selected for optional installation, as listed below. Given the platform independent nature of these installation instructions for the database, platform dependent components are not listed here. Instead, generic features and functions of the Oracle 11g database are identified.

The following features are required by the PPS-N system:

- Procedural Language/Structured Query Language (PL/SQL) Native Compilation
- PL/SQL API to LDAP – DBMS_LDAP

The following additional features have been tested with the PPS-N system:

- Fail Safe
- Integrated Clusterware
- Automatic Workload Management
- Password Management
- Comprehensive eXtensible Markup Language (XML) Support in the Database
- Enterprise Manager
- Automatic Memory Management
- Automatic Storage Management
- Automatic Undo Management
- Server Managed Backup and Recovery

The following features are not required and were not tested with the PPS-N system:

- Flashback Query
- Table, Database, and Transaction Query

- Data Guard
- Java Native Compilation
- Encryption Toolkit
- Virtual Private Database
- Fine Grained Auditing
- Java Support
- JDBC Drivers on server
- PL/SQL Server Pages
- Java Server Pages
- COM (Component Object Model) Automation
- Microsoft Transaction Server/COM+ Integration
- Open Database Connectivity (ODBC) DB on server
- Object Linking and Embedding, Database (OLE DB) on server
- Data Compression
- Transportable Tablespaces
- Star Query Optimization
- Summary Management
- Materialized View Query Rewrite
- Oracle Streams
- Advanced Queuing
- Workflow
- Distributed Queries
- Distributed Transactions
- Database Workspace Management
- Ultra Search
- interMedia
- Text
- Oracle Analytic Functions
- Demonstration Files

The following functions are not required and were not tested with the PPS-N system:

- Replication
- Materialized Views
- Remote Authentication
- Quotas
- Profiles
- Resource Plans
- Stored Outlines

3.3.1.3 Oracle User Creation

Two users must be created within the Oracle database to support PPS-N. Table 3-2 presents example username and password for each Oracle user. Note that user names and passwords used must match exactly those used to configure the JDBC data sources in Section 3.5.4; these are only **sample** values.

Table 3-2. Oracle Users

Username	Password
PPSNEPL	pharmacy
FDB_DIF	FDB_DIF123

The PPSNEPL user will be the owner of the PPS-N schema. The FDB_DIF user will be the owner of the FDB_DIF schema.

Both users must have the following roles and privileges:

- CONNECT
- RESOURCE
- CREATE SESSION
- CREATE VIEW
- SELECT_CATALOG_ROLE
- UNLIMITED TABLESPACE

3.3.1.4 Oracle Configuration

The PPS-N Oracle Database is the primary data repository for the PPS-N application on the National PPS-N instance. The database should be installed and configured appropriately for the PPS-N operating environment.

Two schemas must be created. If not already installed, the FDB_DIF schema can be created by running a script, provided with the First DataBank software. Upon creation, the tables may be populated using First DataBank Data Updater Installation. Update instructions are available in the *FDB Data Updater Software Users Guide*.

The EPL schema must also be created in the database instance. The EPL table creation and population scripts are run from a separate process. For instructions on loading the EPL data, refer to Section 3.3.2.

3.3.1.4.1 Oracle Database Parameters

The following Oracle database parameters are required for the PPS-N application:

- NLS Language = American
- NLS Territory = America
- Character Set = AL32UTF8

3.3.1.4.2 Oracle Tablespaces

The PPS-N application data is contained in two tablespaces. The size of each tablespace is shown in Table 3-3.

Table 3-3. PPS-N Tablespaces

Tablespace Name	Size (MB)
TEMP	188
USERS	3,000

3.3.2 EPL Data Load

The following instructions should be followed to install the base EPL Data Load. Prior to following any of the installation instructions, the dependencies in Section 3.3.2.1 must be installed. After the dependencies have been installed, follow the instructions in Section 3.3.2.2 to load the data using the Ant build.

3.3.2.1 Dependency Installation

Two other software packages must be installed prior to loading the EPL data.

Prior to installing the dependencies, follow these steps:

1. Copy the `PPSN-1_SourceCode.zip` file to the chosen target folder. The file is located on the disk distributed with the Version Description Document. No particular location is required.
2. Unzip the file.

This will create the following folder structure:

```
PS_PPS_Bld\PS_PPS_bld
PS_PPS_Bld\PS_PPS_lib
PS_PPS_Dev\PS_PPS_common
PS_PPS_Dev\PS_PPS_interface
PS_PPS_Dev\PS_PPS_domain
PS_PPS_Dev\PS_PPS_srv
PS_PPS_Dev\PS_PPS_ui
```

The `PS_PPS_Dev\PS_PPS_domain` folder contains the files necessary to create and load the EPL tables.

3.3.2.1.1 Java SE Development Kit (JDK) Installation

Java SE Development Kit (JDK) Version 1.6.0_16 or greater, must be installed prior to loading the PPS-N EPL data load. PPS-N was tested with the current JDK release (as of July 2011), 1.6.0_26. Please follow the installation instructions provided by Sun to complete the installation. For the Microsoft Windows operating system, refer to <http://java.sun.com/javase/6/webnotes/install/jdk/install-windows.html>; for the Linux operating system, refer to <http://java.sun.com/javase/6/webnotes/install/jdk/install-linux.html>. Once complete, this new installation of Java must be set as the default Java distribution (i.e., the installation folder must be set as `JAVA_HOME`).

3.3.2.1.2 Apache Ant Installation

Apache Ant, **version 1.7.1**, must be installed prior to loading the PPS-N EPL data load. Please follow the installation instructions provided by Apache at <http://ant.apache.org/manual/install.html>. Once complete, a user must be able to execute Ant by typing `ant` at the command line from any folder on the system (i.e., Ant's `bin` folder must be on the system's path).

3.3.2.2 Ant Build Data Load

Please complete these steps to load the PPS-N data. **Alternatively**, you can skip this section and use the instructions in section 3.3.2.3 to load data.

1. Navigate to the folder where the PPSN-1_SourceCode.zip file was extracted.
2. Navigate to the PS_PPS_Dev/PS_PPS_common/etc/build/template/properties folder.
3. Open the `project.properties` file for editing.
4. Change the `deploy.environment` attribute's value to `dataload`. For example:
`deploy.environment=dataload`
5. Save the changes and close the `project.properties` file.
6. Navigate to the PS_PPS_Dev/PS_PPS_common/etc/build/template/properties/deploy folder.
7. Open the `dataload.properties` file for editing.
8. Change the `local.hosts` attribute value to an empty value. For example:
`local.hosts=`
This prevents the `dataload` from attempting to load the Local data, which is not applicable at this time.
9. Change the `nationalserver.database.url.host` attribute value to the hostname of the database server. The default value is `localhost`. For example:
`nationalserver.database.url.host=localhost`
This value pertains to the attribute key names for the `user`, `password` and `schema` in the next step.
10. Change all attribute key names of `localhost` under the `nationalserver` properties section to the name of the database server used in step 9. For example: `localhost.EPLN.user=ppsnepl` should change to `<database>.EPLN.user=ppsnepl`, `localhost.EPLN.password` becomes `<database>.EPLN.password` and `localhost.EPLN.schema` becomes `<database>.EPLN.schema`.
11. With respect to the previous step (which may have changed the key names to something other than `localhost`), change `localhost.EPLN.user`, `localhost.EPLN.password` and `localhost.EPLN.schema` attribute values to the correct values for the National PPS-N database. For example: `localhost.EPLN.user=ppsnepl` and `localhost.EPLN.password=pharmacy`.
12. If the database name used on the install was not `EPLN`, change the `nationalserver.national.database.names` attribute value to the name of the National EPL database. For example:
`nationalserver.national.database.names=EPLN`
Ensure all instances of "EPLN" occurring within key names of step 10 are also changed. For example, if step 10 changed `localhost` to `dbserver` and this step changed `EPLN` to `EPLNAT`, the following would be the final result:

```
dbserver.EPLNAT.user=ppsnepl
dbserver.EPLNAT.password=pharmacy
dbserver.EPLNAT.schema=ppsnepl
```

13. Save the changes and close the `dataload.properties` file.
14. Navigate to the `PS_PPS_Dev/PS_PPS_domain/etc/build/template/properties` folder.
15. Open the `oracle.properties` file for editing.
16. If the port on which Oracle is listening is not port 1521, change the `database.url.port` attribute value to the correct port. For example: `database.url.port=1522`
17. Save the changes and close the `oracle.properties` file.
18. Navigate to the `PS_PPS_Dev/PS_PPS_domain` folder.
19. Run the ant build target desired.
 - `refreshDatabase` – Refresh the database with data used for non-migration test procedures.
command: `ant refreshDatabase`

After the build completes, the current PPS-N EPL database instance has both its tables created and data loaded.

3.3.2.3 SQL Script Data Load (alternative to 3.3.2.2 Ant Build Data Load)

As an alternative, you may load the database with the following SQL scripts found in `PPSNEPLRefreshDb-1.zip` archive. Please use an appropriate database client (e.g. TOAD, SQL*Plus, etc.) to execute these scripts. The order of execution is required:

1. `NationaleEPL.ddl`
2. `NationaleEPL-FK.ddl`
3. `PPSNEPLRefreshDB15.sql`

3.3.3 Post Database Creation / Migration Scripts

The following scripts will need to be run after table creation and data population. These scripts require logging in to the database using an account that has **SYS_DBA** privileges. *This script also needs to be run after each Migration done from within the application.*

1. Login to the SQL client using a database account that has **SYS_DBA** privileges
2. Execute the script below (also available in the SQL script archive: `PPSNEPLRefreshDb-1.zip`)

```
--Script to create the PPSNEPL_READ_ONLY role.
--Provides read only access to PPSNEPL schema objects.
DROP ROLE PPSNEPL_READ_ONLY_ROLE;
CREATE ROLE PPSNEPL_READ_ONLY_ROLE NOT IDENTIFIED;

--suppress display of messages for building command file
SET TERM      OFF
```

```

SET ECHO      OFF
SET HEADING   OFF
SET FEEDBACK  OFF
SET PAGESIZE  0
SET LINESIZE  1000
SET VERIFY   OFF

spool grant_PPSN_read_only_role.sql
SELECT 'GRANT SELECT ON PPSNEPL.' || TABLE_NAME|| ' TO
PPSNEPL_READ_ONLY_ROLE; ' FROM ALL_TABLES WHERE OWNER ='PPSNEPL';
spool off

--reset display of messages for verification
SET TERM      ON
SET ECHO      ON
SET HEADING   ON
SET FEEDBACK  ON
SET PAGESIZE  300
SET VERIFY   ON

spool grant_PPSN_read_only_role.log
start grant_PPSN_read_only_role.sql
GRANT PPSNEPL_READ_ONLY_ROLE TO SYSTEM WITH ADMIN OPTION;
spool off

```

3. This process creates and executes the file `grant_PPSN_read_only_role.sql`. This will ensure that all necessary privileges are granted to the read-only role.
4. Open the `grant_PPSN_read_only_role.log` file and search the log file for any errors.
5. Execute the script below which will create the user and assign the required roles. The script is also available in the SQL script archive, `PPSNEPLRefreshDb-1.zip`.

```

DROP USER PPSNEPL_READ_ONLY CASCADE;

CREATE USER PPSNEPL_READ_ONLY
  IDENTIFIED BY PPSNEPL_READ_ONLY123
  DEFAULT TABLESPACE USERS
  TEMPORARY TABLESPACE TEMP
  PROFILE DEFAULT
  ACCOUNT UNLOCK;
-- 3 Roles for PPSNEPL_READ_ONLY
GRANT CONNECT TO PPSNEPL_READ_ONLY;
GRANT PPSNEPL_READ_ONLY_ROLE TO PPSNEPL_READ_ONLY;
GRANT FDB_DIF_READ_ONLY_ROLE TO PPSNEPL_READ_ONLY;
ALTER USER PPSNEPL_READ_ONLY DEFAULT ROLE ALL;
-- 1 Tablespace Quota for PPSNEPL_READ_ONLY
ALTER USER PPSNEPL_READ_ONLY QUOTA UNLIMITED ON USERS;

```

6. View screen output for any errors

3.4 VistA/M System Installation User and Role Installation

This section details the steps required to install patches, add users, assign roles, and install remote procedure calls (RPCs) to the PPS-N VistA instance. For this code release, a user, for example one with an access code of PNM1N1, with the 'PSS_PPSN_MANAGER' key and a user, for example one with an access code of PMM1N1, with the 'PSS_PPSN_MIGRATOR' key are required. The following figure

details the security role keys used within and recognized by this application. Please note prior “PEPS” security role keys have been removed and are no longer recognized.

Security Role Keys
PSS_PPSN_SUPERVISOR
PSS_PPSN_MANAGER
PSS_PPSN_VIEWER
PSS_PPSN_SECOND_APPROVER
PSS_PPSN_MIGRATOR

Figure 3-2. Security Roles

This code release also includes the PPSN_11_10.KID (Migration) and the PPSNS_11_10.KID (UFT2 Synchronization) patches that install versions of the migration and synchronization RPC code. These KID patches need to be loaded and installed on the NDF server using the standard Kernel Installation & Distribution Systems Option in the System Manager menu. After the PPSN_11_10.KID patch is loaded, the PPSN*1.0*10 package can be installed. After the PPSNS_11_10.KID patch is loaded, the PPSNS*1.0*10 package can be installed.

VistALink 1.6 must be installed on the NDF. See the VistALink documentation for installing VistALink. Once installed, VistALink can be started using the D EN^XOBUM command. Once VistALink is running, the listener must be started using the SL (Start Listener) option. If VistALink is already running, the listener can be started using the Foundations Management menu found in the Operations Management menu. If a connection proxy has not been specified for VistALink, the NPF CONNECTOR PROXY can be specified using the CP (Enter/Edit Connector Proxy User) option on the Foundations Management menu. Creating the Connector Proxy User via the Foundations Management menu should ensure that the Connector Proxy User has the correct properties.

This release contains 3 Remote Procedure Calls “PPS NDFMS MIGR RPC”, “PPS NDFMS MIGR SYNC” and “PPS NDFMS SYNC”. If not already in the XOBV VISTALINK TESTER option, these RPCs must be added to the XOBV VISTALINK TESTER option. The RPCs can be added to the XOBV VISTALINK TESTER option by using the FILEMAN ENTER OR EDIT FILE ENTRIES command to modify the XOBV VISTALINK TESTER entry in the OPTION file by adding the options at the “Select RPC” prompt (RPCKEY and RULES can be defaulted to null).

The PPS proxy user, for example PPUSER, APPLICATION PROXY, must have the XOBV VISTALINK TESTER option as a secondary menu option. The XOBV VISTALINK TESTER option can be added as a secondary menu option by using the FILEMAN ENTER OR EDIT FILE ENTRIES command to modify the NEW PERSON entry for the PPS proxy user by adding XOBV VISTALINK TESTER at the “Select SECONDARY MENU OPTIONS” prompt.

A line must be included in the /opt/oracle/middleware/domains/PRE/CommonServices/VL-1.6/**REDACTED**vistalink.connectorConfig.xml file on the WebLogic server with the IP address and port of the VistALink listener (selectable when the Listener is turned on); the primary station ID of the NDF; the access and verify codes for the user being used for the connection, for example the XOBV VISTALINK TESTER; and other information necessary for the connection to be made to the VistALink listener in the NDF.

The DUZ and division of the PPS-N PROXY USER (the system user account capable of accessing the RPC), the division where that user exists, the connection specification to be used (for example DUZ) and

the RPC timeout (for example 60 seconds) must be entered into the PPS-NConfig.xml in the .../domains/PRE/config directory on the WebLogic server. The configuration file is shown in Section 7

3.5 WebLogic Installation Instructions

This section details the steps required to configure and deploy PPS-N onto WebLogic.

3.5.1 WebLogic Listen Address

PPS-N is installed on a managed server (e.g. NationalPharmacyServer), and WebLogic 10.3 requires that the Listener Address field be set on the servers. Set this value on the server's General Settings tab. For reference, see Figure 3-3.

Note: The port that the application is installed on must also be set in the Configuration file shown in Section 7 because the JNDI lookup is site specific. If the port is not also defined in the configuration file the application will not work correctly.

The screenshot shows the 'Settings for NationalPharmacyServer' configuration page. The 'General' tab is selected, and the 'Listen Address' field is highlighted. The configuration details are as follows:

Field	Value	Description
Name	NationalPharmacyServer	An alphanumeric name for this server instance. More Info...
Machine	pre-ep1	The WebLogic Server host computer (machine) on which this server is meant to run. More Info...
Cluster	(Stand-Alone)	The cluster, or group of WebLogic Server instances, to which this server belongs. More Info...
Listen Address	129.162.101.74	The IP address or DNS name this server uses to listen for incoming connections. More Info...
Listen Port Enabled	<input checked="" type="checkbox"/>	Specifies whether this server can be reached through the default plain-text (non-SSL) listen port. More Info...
Listen Port	8021	The default TCP port that this server uses to listen for regular (non-SSL) incoming connections. More Info...
SSL Listen Port Enabled	<input type="checkbox"/>	Indicates whether the server can be reached through the default SSL listen port. More Info...
SSL Listen Port	7002	The TCP/IP port at which this server listens for SSL connection requests. More Info...
Client Cert Proxy Enabled	<input type="checkbox"/>	Specifies whether the HttpClusterServlet proxies the client certificate in a special header. More Info...
Java Compiler	javac	The Java compiler to use for all applications hosted on this server that need to compile Java code. More Info...
Diagnostic Volume	Low	Specifies the volume of diagnostic data that is automatically produced by WebLogic Server at run time. Note that the WLDLF diagnostic volume setting does not affect explicitly configured diagnostic modules. For example, this controls the volume of events generated for JRodit Flight Recorder. More Info...

Figure 3-3. Listen Address

3.5.2 Dependency Installation

VistALink, Version 1.6.0.028 and KAAJEE Security Provider, Version 1.1.0.002 software packages must be installed prior to deployment of PPS-N on to WebLogic. Follow the respective installation guides supplied by the VA for this software prior to continuing with the PPS-N installation.

3.5.3 Class Path

In order for the JDBC data sources to be added to the WebLogic configuration, the JDBC driver must first be added to the Deployment Server's class path. Use the JDBC driver provided within the Oracle distributions and the WebLogic documentation provided by Oracle (formerly BEA) to add the driver to the class path.

Important: Third-party database drivers, e.g. JDBC drivers for MS SQL Server from Microsoft, will need to be deployed onto the WebLogic server's classpath, `${WL_HOME}/server/lib`. Additionally, any such third-party drivers will also need to be prepended to the `WEBLOGIC_CLASSPATH` variable definition in the `${WL_HOME}/common/bin/commEnv.sh` file. E.g. "WEBLOGIC_CLASSPATH="`${WL_HOME}/server/lib/sqljdbc4.jar${CLASSPATHSEP}`.....(rest of definition)." Any modification here requires the entire WebLogic server system to be restarted. E.g. AdminServer and any Managed Servers.

- The MS SQLServer JDBC driver can be extracted from the application,
 - `PPSN-1.1.xx.ear\lib\database\sqljdbc4.jar`
 - Or from the source zip file: `Common\lib\database\sqljdbc4.jar`

The PPS-N EAR file contains all the remaining required libraries for the proper functioning of the application. If any other applications have been deployed to the Deployment Server, there may be conflicting third-party libraries in the Deployment Server's class path directories that will cause the PPS-N application to operate differently than expected. If versions on the Deployment Server's class path differ from those defined in the PPS-N 1.0 Version Description Document, then the preferred solution would be to remove the library from the Deployment Server's class path. If that is not possible, replace the libraries with the PPS-N versions.

Two JAXB version 2.1.10 libraries must be at the very beginning of the class path due to PPS-N incompatibility with the JAXB version bundled with WebLogic, JAXB version 2.1.9. The `jaxb-api.jar` and `jaxb-impl.jar` files are available within the PPS-N EAR with this code drop. These JAR files must come before any WebLogic JAR files, as the classes found within the JAR files supersede the original WebLogic supplied classes. The JAR files include JAXB bug fixes required for PPS-N to function properly, particularly https://jaxb.dev.java.net/issues/show_bug.cgi?id=565.

3.5.4 JTA Transaction Timeout

The default WebLogic Java Transaction API (JTA) timeout is 30 seconds. This time is sufficient for all transactions in PPS-N, with the exception of the FDB DIF update process, which can take several minutes. Follow the instructions below to set the JTA timeout to 600 seconds, or 10 minutes. If the migration database refreshes scripts transaction times out even after ten minutes, additional time can be allotted to the timeout setting by following the same process.

Perform the following instructions for each WebLogic domain where PPS-N will be deployed.

1. Open and log into the WebLogic console, using an administrative user name and password. The WebLogic console is located at: `http://<Deployment Machine>:7001/console`.

3. Within the `Domain Structure` panel found in the left column of the WebLogic console, click on the WebLogic domain's node. In Figure 3-5, the WebLogic domain is named `PRE`.

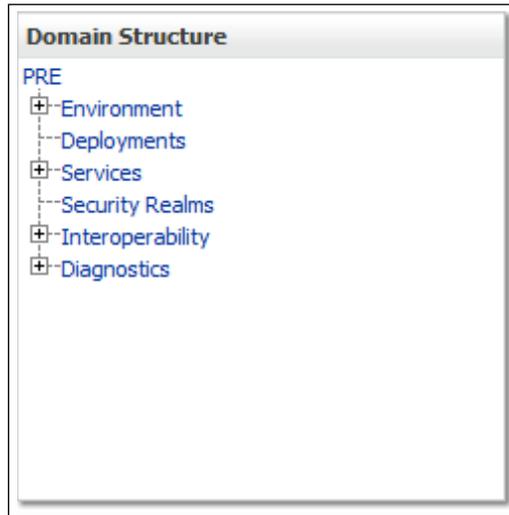


Figure 3-4. Domain Structure

4. WebLogic will now display the panel `Settings for PRE` in the right column of the console, where details of the WebLogic domain are set. For reference, see Figure 3-5.

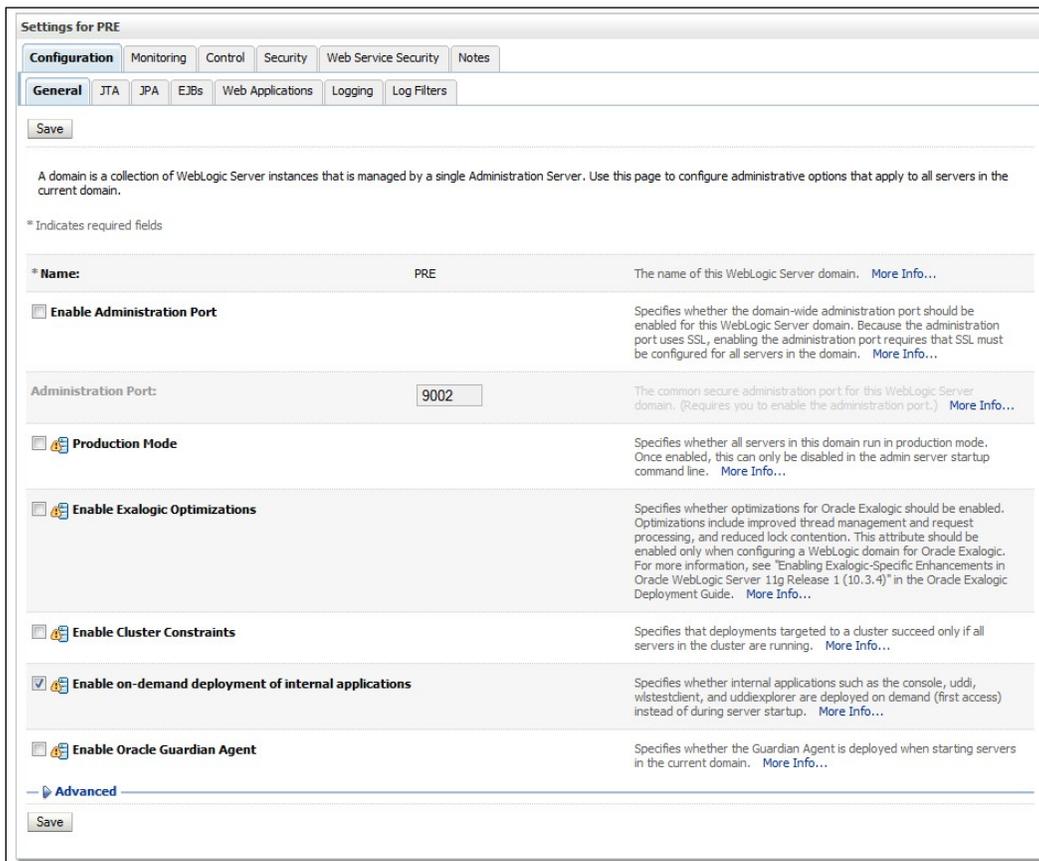


Figure 3-5. Settings for PRE

5. Select the `JTA` tab.

- WebLogic will now display the panel `Settings` for `PRE` in the right column of the console. Within the panel is `JTA` within the `Configuration` tab, where the `JTA` timeout will be configured. For reference, see Figure 3-6.

Settings for PRE

Configuration | Monitoring | Control | Security | Web Service Security | Notes

General | **JTA** | JPA | EJBs | Web Applications | Logging | Log Filters

Use this page to define the Java Transaction API (JTA) configuration of this WebLogic Server domain.

Timeout Seconds:	<input type="text" value="300"/>	Specifies the maximum amount of time, in seconds, an active transaction is allowed to be in the first phase of a two-phase commit transaction. If the specified amount of time expires, the transaction is automatically rolled back. More Info...
Abandon Timeout Seconds:	<input type="text" value="86400"/>	Specifies the maximum amount of time, in seconds, a transaction manager persists in attempting to complete the second phase of a two-phase commit transaction. More Info...
Before Completion Iteration Limit:	<input type="text" value="10"/>	The maximum number of cycles that the transaction manager performs the beforeCompletion synchronization callback for this WebLogic Server domain. More Info...
Max Transactions:	<input type="text" value="10000"/>	The maximum number of simultaneous in-progress transactions allowed on a server in this WebLogic Server domain. More Info...
Max Unique Name Statistics:	<input type="text" value="1000"/>	The maximum number of unique transaction names for which statistics are maintained. More Info...
Checkpoint Interval Seconds:	<input type="text" value="300"/>	The interval at which the transaction manager creates a new transaction log file and checks all old transaction log files to see if they are ready to be deleted. More Info...
<input checked="" type="checkbox"/> Forget Heuristics		Specifies whether the transaction manager automatically performs an XA Resource forget operation for heuristic transaction completions. More Info...
Unregister Resource Grace Period:	<input type="text" value="30"/>	The amount of time, in seconds, a transaction manager waits for transactions involving the resource to complete before unregistering a resource. This grace period helps minimize the risk of abandoned transactions because of an unregistered resource, such as a JDBC data source module packaged with an application. More Info...
<input checked="" type="checkbox"/> Execute XA Calls In Parallel		Indicates that XA calls are executed in parallel if there are available threads. More Info...
<input checked="" type="checkbox"/> Enable Two Phase Commit		Indicates that the two-phase commit protocol is used to coordinate transactions across two or more resource managers. More Info...

— **Advanced**

Figure 3-6. JTA Timeout Seconds

- For the `Timeout Seconds`, type `600`. Please note this has changed since interim release 1.0.5
- Click `Save`

3.5.5 JDBC Data Source Configuration

PPS-N uses database connections by means of JDBC data sources to FDB DIF and to the Local EPL or the National EPL. Repeat the following instructions at each deployment location to create a new data source for each database. The databases required at each deployment location as well as their respective database driver and JNDI name settings are provided in Table 3-4.

Table 3-4. Deployment Location Database Configuration

Deployment Location	Database	Database Type	Database Driver	Transaction Options	JNDI Name
National	FDB DIF	Oracle	Oracle's Driver (Thin XA) Versions: 9.0.1 and later	Supports Global Transactions	datasource/FDB-DIF
	National EPL	Oracle	Oracle's Driver (Thin XA) Versions: 9.0.1 and later	Supports Global Transactions	datasource/NationalEPL
	FSS	MS SQL Server	Microsoft's MS SQL Server Driver (Type 4) Versions: 2005	Supports Global Transactions Emulate Two-phase Commit	datasource/PRE-FSS

1. Open and log on to the WebLogic console, using an administrative user name and password. The WebLogic console is located at: `http://<Deployment Machine>:7001/console`.
2. Within the Domain Structure panel found in the left column of the WebLogic console, click on the `Services > Data Sources` node. For reference, see Figure 3-7. Please note that these images were captured from WebLogic 10.3.5, as such the Domain Structure navigation may vary slightly. For example, WebLogic 10.3.2 may require the following navigation sequence instead: `Services > JDBC > Data Sources`.

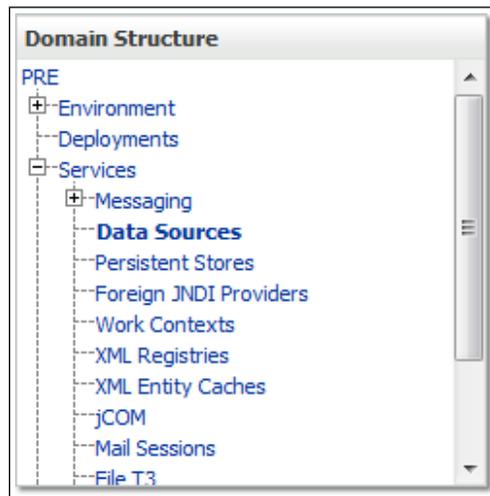


Figure 3-7. Domain Structure

- Click **New** in the **Summary of JDBC Data Sources** panel found in the right column of the WebLogic console and choose **Generic Datasource** from the drop down list. For reference, see Figure 3-8.

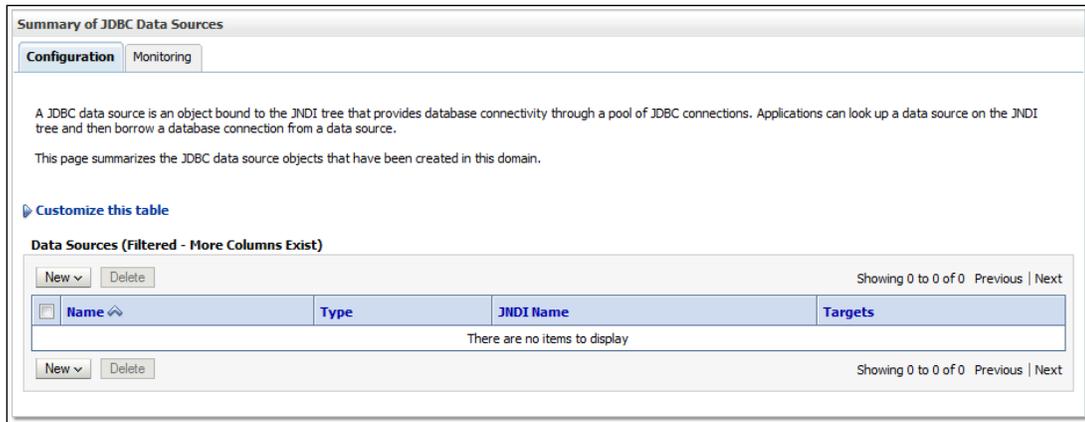


Figure 3-8. Summary of JDBC Data Sources

- WebLogic will now display the panel **Create a New JDBC Data Source** in the right column of the console, where details of the new data source are set. For reference, see Figure 3-9.

Figure 3-9. JDBC Data Source Properties

- For the **Name**, type a unique name. For example, **FDB-DIF**.

7. For the JNDI Name, type the appropriate JNDI found in Figure 3-9. For example, datasource/FDB-DIF.
8. For the Database Type, select the appropriate type found in Table 3-4. For example, Oracle.
9. Click Next.
10. For the Database Driver, verify that the correct driver is selected as found in Table 3-4. For example, Oracle's Driver (Thin XA) Version: 9.0.1 and later.
11. Click Next.
12. WebLogic will now display the panel Transaction Options in the right column of the console, where the transaction information for this data source is displayed. For reference, see Figure 3-10.

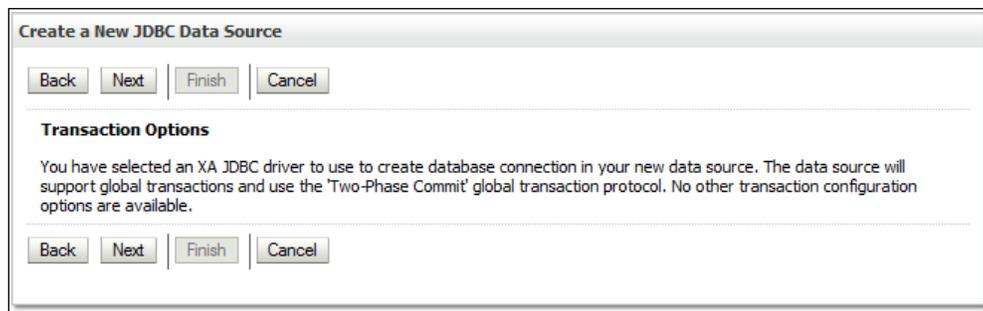


Figure 3-10. Transaction Options

13. Click Next.

14. WebLogic will now display the panel `Connection Properties` in the right column of the console, where the connection pool attributes are set. For reference, see Figure 3-11.

Create a New JDBC Data Source

Back Next Finish Cancel

Connection Properties
Define Connection Properties.

What is the name of the database you would like to connect to?

Database Name:

What is the name or IP address of the database server?

Host Name:

What is the port on the database server used to connect to the database?

Port:

What database account user name do you want to use to create database connections?

Database User Name:

What is the database account password to use to create database connections?

Password:

Confirm Password:

Back Next Finish Cancel

Figure 3-11. Connection Properties

15. For `Database Name`, type the name of the database to which PPS-N will connect. For example, `EPLN`.
16. For `Host Name`, type the name of the machine on which the database is running. For example, `PPS-N-DB`.
17. For `Port`, type the port on which the database is listening. For example, `1521`.
18. For `Database User Name`, type the user to connect to the FDB database. For example, `fdb_dif`. The user entered should be the same as the user configured in Section 3.3.1.3. For `Password` and `Confirm Password`, type the password for the user given previously. For example, `fdb_dif123`.
19. Click `Next`.

20. WebLogic will now display the panel **Test Database Connection** in the right column of the console, where the new data source can be tested. For reference, see Figure 3-12.

The screenshot shows a wizard window titled "Create a New JDBC Data Source" with a "Test Database Connection" step selected. The window contains several sections for configuration and testing:

- Test Database Connection:** A section with instructions to test database availability and connection properties.
- Driver Class Name:** A text field containing "oracle.jdbc.xa.client.Ora".
- URL:** A text field containing "jdbc:oracle:thin:@PEPS".
- Database User Name:** A text field containing "fdb_dif".
- Password:** A password field with masked characters.
- Confirm Password:** A password field with masked characters.
- Properties:** A text area containing "user=fdb_dif".
- System Properties:** An empty text area.
- Test Table Name:** A text area containing "FDB_VERSION".

Navigation buttons at the top and bottom include "Test Configuration", "Back", "Next", "Finish", and "Cancel".

Figure 3-12. Test Database Connection

21. Leave all values as set by default, with the exception of `Test Table Name`. For FDB DIF databases, type `fdb_version`. For EPL databases, type `epl_products`.
22. For the FSS datasource, you will be connecting to an MS SQL Server database, so items listed in **Figure 3-12. Test Database Connection** will be slightly different and require changing to the following:
 URL: `jdbc:sqlserver://hostname:1433`
 Driver Class Name: `com.microsoft.sqlserver.jdbc.SQLServerDriver`
 Test Table Name: `DI_DRUGITEMNDC`
23. Click `Next`.
24. WebLogic will now display the panel `Select Targets` in the right column of the console, where the target server is selected for the new data source. For reference, see Figure 3-13.

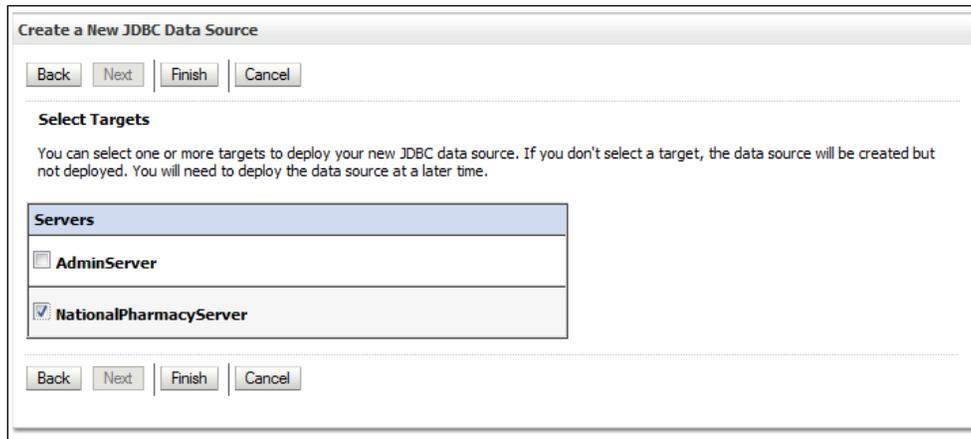


Figure 3-13. Select Targets

25. Select the Deployment Server as the target. For example, `NationalPharmacyServer`.
26. Click `Finish`.
27. WebLogic will now display the panel `Summary of JDBC Data Sources` in the right column of the console, where the newly created data source is displayed. For reference, see **Error! Reference source not found.**

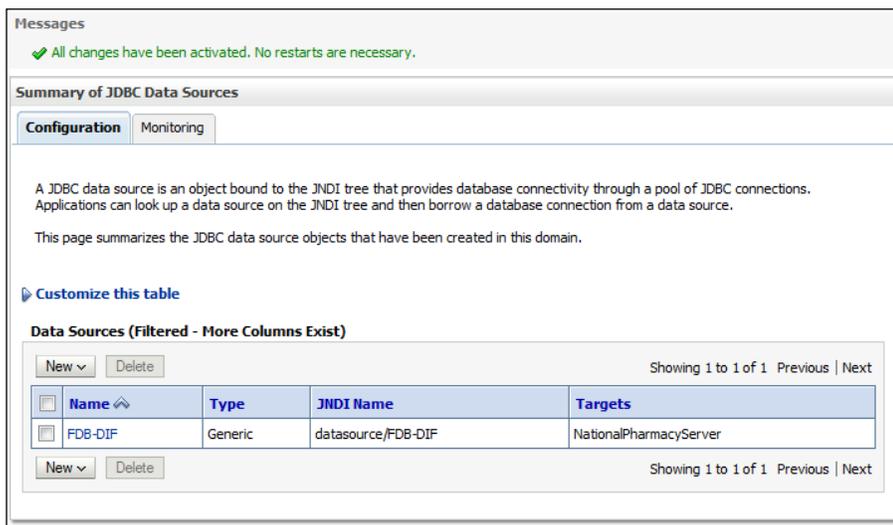


Figure 3-14, Summary of JDBC Data Sources

28. On these summary page, click on the JDBC source that was just created. Click on the **Connection Pool** tab. The **Maximum Capacity** value is likely set to 15 by default; adjust this value to what is appropriate for the environment. A recommended value of 30 (or more) for NationalEPL, FDB-DIF, and FSS should be sufficient for most cases.
29. After completing the previous steps, remember to repeat all the steps for each database listed in Table 3-4.

3.5.6 Server Logs and Log4J configuration

PPS-N uses Log4j to provide debug and error logs. Although the application will function without Log4j installed, using it can be helpful to troubleshoot potential issues. Because PPS-N can operate without Log4j configured, all instructions within this section are only required if debugging deployed code.

If the installation of Log4j is desired, the Java Archive (JAR) file can be found within the PPS-N EAR, or it can be downloaded from the Internet. Please refer to the PPS-N 1.0 Version Description Document for the version required.

3.5.6.1 **Warning: Application Server' Disk Space and Log Files**

Due to the sheer volume of log statements issued by the application, the log files can become very large in a very short amount of time. In order to prevent the loss of log information, it is advisable that the application server's logging feature(s) be configured to "rollover" log files at 10MB and at restart with retention [of older logs] set to 10 or less. Failure to observe this may result in the application behaving in an unexpected, sluggish or error-prone manner as the log files can fill up the disk partition which may in turn inhibit correct functionality of the server and/or the application.

Additionally, WebLogic has "standard out" log files for each server. **This file does not get rotated.** If the `log4j.xml` configuration file has a "ConsoleAppender" and at least one logger that utilize this appender, these log statements will be directed to the server's out file, e.g. `domain/servers/NationalPharmacyServer/logs/NationalPharmacyServer.out`.

It is absolutely critical to ensure that an appender reference to a ConsoleAppender is not listed in the `<root>` section of the `log4j.xml` file, this can cause the "standard out" log file to grow at an exceedingly fast rate.

A `log4j.xml` configuration that does not use a Console appender will produce no additional output to the "standard out" log file.

3.5.6.1.1 Domain Logging

Domain-level logging should have a limited number of retained files, and set rotation size as well.

Settings for PRE

Configuration | Monitoring | Control | Security | Web Service Security | Notes

General | JTA | EJBs | Web Applications | **Logging** | Log Filters

Save

Because each WebLogic Server domain can run concurrent, multiple instances of WebLogic Server, WebLogic logging services collect messages that are generated on multiple server instances into a single, domain-wide message log. You can use this domain-wide message log to see the overall status of the domain.

Use this page to configure the message log for this WebLogic Server domain.

Log file name: logs/PRE.log
The name of the file that stores current log messages. Usually it is a computed value based on the name of the parent of this MBean. For example, for a server log, it is serverName.log. [More Info...](#)

Rotation

Rotation type: By Size
Criteria for moving old log messages to a separate file. [More Info...](#)

Rotation file size: 500
The size (1 - 65535 kilobytes) that triggers the server to move log messages to a separate file. After the log file reaches the specified minimum size, the next time the server checks the file size, it will rename the current log file as FileName.n and create a new one to store subsequent messages. (Requires that you specify a file rotation type of Size.) [More Info...](#)

Begin rotation time: 00:00
Determines the start time (hour and minute) for a time-based rotation sequence. [More Info...](#)

Rotation interval: 24
The interval (in hours) at which the server saves old log messages to another file. (Requires that you specify a file rotation type of TIME.) [More Info...](#)

Limit number of retained files
Indicates whether to limit the number of log files that this server instance creates to store old messages. (Requires that you specify a file rotation type of SIZE or TIME.) [More Info...](#)

Files to retain: 7
The maximum number of log files that the server creates when it rotates the log. This number does not include the file that the server uses to store current messages. (Requires that you enable Number of Files Limited.) [More Info...](#)

Log file rotation directory:
The directory where the rotated log files will be stored. By default the rotated files are stored in the same directory where the log file is stored. [More Info...](#)

Rotate log file on startup
Specifies whether a server rotates its log file during its startup cycle. [More Info...](#)

Figure 3-15. Domain Log File Settings

3.5.6.1.2 Managed Server Logging

The managed server also allows the additional specification of log file settings. See the figures below as a means of a reference *example* only.

The screenshot shows the 'Settings for NationalPharmacyServer' interface. At the top, there are tabs for Configuration, Protocols, Logging (selected), Debug, Monitoring, Control, Deployments, Services, Security, and Notes. Below these are sub-tabs for General (selected) and HTTP. A 'Save' button is located at the top left of the main content area. The main content area contains the following settings:

- Log file name:** logs/NationalPharmacy. Description: The name of the file that stores current log messages. Usually it is a computed value based on the name of the parent of this MBean. For example, for a server log, it is serverName.log. [More Info...](#)
- Rotation type:** By Size. Description: Criteria for moving old log messages to a separate file. [More Info...](#)
- Rotation file size:** 10240. Description: The size (1 - 65535 kilobytes) that triggers the server to move log messages to a separate file. After the log file reaches the specified minimum size, the next time the server checks the file size, it will rename the current log file as FileName.n and create a new one to store subsequent messages. (Requires that you specify a file rotation type of Size.) [More Info...](#)
- Begin rotation time:** 00:00. Description: Determines the start time (hour and minute) for a time-based rotation sequence. [More Info...](#)
- Rotation interval:** 24. Description: The interval (in hours) at which the server saves old log messages to another file. (Requires that you specify a file rotation type of TIME.) [More Info...](#)
- Limit number of retained files**. Description: Indicates whether to limit the number of log files that this server instance creates to store old messages. (Requires that you specify a file rotation type of SIZE or TIME.) [More Info...](#)
- Files to retain:** 10. Description: The maximum number of log files that the server creates when it rotates the log. This number does not include the file that the server uses to store current messages. (Requires that you enable Number of Files Limited.) [More Info...](#)
- Log file rotation directory:** (empty field). Description: The directory where the rotated log files will be stored. By default the rotated files are stored in the same directory where the log file is stored. [More Info...](#)
- Rotate log file on startup**. Description: Specifies whether a server rotates its log file during its startup cycle. [More Info...](#)

Figure 3-16. Managed Server Log File Settings

▼ **Advanced**

Minimum severity to log: ▼ The minimum sev messages are pt

📄 **Logger severity properties:** The configuratio the predefined S Info, Debug, Tr

🔒 **Logging implementation:** ▼ Specifies whethe WebLogic loggin of the JDK. Mc

🔒 **Redirect stdout logging enabled** When enabled, runs, to the Wel registered log de

Message destination(s)

Log file :

Severity level: ▼ The minimum sev go to the log file

Filter: ▼ The filter config

Standard out :

Severity level: ▼ The minimum sev severity than th

Filter: ▼ The filter config

Domain log broadcaster :

Severity level: ▼ The minimum sev broadcaster. Me published to the

Filter: ▼ The filter config

Buffer Size: Broadcasts log n

Memory buffer :

Severity level: ▼ The minimum sev Messages with a

Figure 3-17. Managed Server Advanced Log File Settings

3.5.6.2 Installation of Log4J

To install Log4j, the Log4j JAR must be placed on the Deployment Server's class path and the `log4j.xml` must be edited to include the PPS-N appenders and loggers. Follow the instructions below to place the Log4j library on the Deployment Server's class path. If Log4j is already installed on the Deployment Server, these steps do not need to be completed.

1. Locate the Deployment Server's Class Path Directory.
2. Copy the `log4j-1.2.14.jar` file into a folder within the class path.
3. Configure WebLogic to include the Log4j library in the Deployment Server's class path. Please refer to the WebLogic documentation provided by Oracle to complete this step.
4. Restart the Deployment Server to load Log4j.

With Log4j installed on the Deployment Server, the `log4j.xml` file must be modified to include the PPS-N configuration. Note that the appenders place the logs under a `log` folder. This folder must be created at the same directory level at which the Deployment Server is running. For example, `/opt/oracle/domains/PRE/log`. Without this folder, Log4j will not be able to create the log files specified in the PPS-N configuration. Alternatively, the file locations could be altered to be placed in a different location. Also note that the `${log4j.logs.dir}` Java system property found within the Log4j configuration in Step 2 must either be set or these values must be replaced with the appropriate path to a `logs` directory. Follow these steps to complete this process:

1. Locate the `log4j.xml` file used for the Deployment Server. If Log4j has not yet been configured on the Deployment Server, either create a new `log4j.xml` file that is located in a folder on the Deployment Server class path or use the `log4j.configuration` Java system property to set the location of the file. Please refer to the WebLogic documentation provided by BEA for configuring the Deployment Server's class path and the Log4j documentation provided by Apache to complete any of these operations.
2. Add the following configuration to the `log4j.xml` file:

```
<appender name="FileAppender"
class="org.apache.log4j.RollingFileAppender">
    <param name="File" value="${log4j.logs.dir}/server.log"/>
    <param name="Append" value="false"/>
    <param name="MaxBackupIndex" value="10"/>

    <layout class="org.apache.log4j.PatternLayout">
        <param name="ConversionPattern" value="%d{dd MMM yyyy
hh:mm:ss a} %-5p [%c:%M] %m%n"/>
    </layout>
</appender>

<appender name="HibernateAppender"
class="org.apache.log4j.RollingFileAppender">
    <param name="File" value="${log4j.logs.dir}/hibernate.log"/>
    <param name="Append" value="false"/>
    <param name="MaxBackupIndex" value="10"/>

    <layout class="org.apache.log4j.PatternLayout">
```

```

        <param name="ConversionPattern" value="%d{dd MMM yyyy
hh:mm:ss a} %-5p [%c:%M] %m%n"/>
    </layout>
</appender>

<appender name="SpringAppender"
class="org.apache.log4j.RollingFileAppender">
    <param name="File" value="${log4j.logs.dir}/spring.log"/>
    <param name="Append" value="false"/>
    <param name="MaxBackupIndex" value="10"/>

    <layout class="org.apache.log4j.PatternLayout">
        <param name="ConversionPattern" value="%d{dd MMM yyyy
hh:mm:ss a} %-5p [%c:%M] %m%n"/>
    </layout>
</appender>

<appender name="StrutsAppender"
class="org.apache.log4j.RollingFileAppender">
    <param name="File" value="${log4j.logs.dir}/struts.log"/>
    <param name="Append" value="false"/>
    <param name="MaxBackupIndex" value="10"/>

    <layout class="org.apache.log4j.PatternLayout">
        <param name="ConversionPattern" value="%d{dd MMM yyyy
hh:mm:ss a} %-5p [%c:%M] %m%n"/>
    </layout>
</appender>

<logger name="org.apache.log4j">
    <level value="info" />
</logger>

<logger name="org.hibernate" additivity="false">
    <level value="info" />
    <appender-ref ref="HibernateAppender"/>
</logger>

<logger name="org.hibernate.type" additivity="false">
    <level value="warn" />
    <appender-ref ref="HibernateAppender"/>
</logger>

<logger name="org.hibernate.loader" additivity="false">
    <level value="warn" />
    <appender-ref ref="HibernateAppender"/>
</logger>

<logger name="org.hibernate.impl" additivity="false">
    <level value="warn" />
    <appender-ref ref="HibernateAppender"/>
</logger>

```

```

<logger name="org.springframework" additivity="false">
    <level value="error" />
    <appender-ref ref="SpringAppender"/>
</logger>

<logger name="org.apache.struts2" additivity="false">
    <level value="error" />
    <appender-ref ref="StrutsAppender" />
</logger>

<logger name="com.opensymphony.xwork2" additivity="false">
    <level value="error" />
    <appender-ref ref="StrutsAppender" />
</logger>

<logger name="org.apache.commons.digester" additivity="false">
    <level value="error" />
    <appender-ref ref="StrutsAppender" />
</logger>

<logger name="freemarker.cache" additivity="false">
    <level value="error" />
    <appender-ref ref="StrutsAppender" />
</logger>

<logger name="org.apache.tiles" additivity="false">
    <level value="error" />
    <appender-ref ref="StrutsAppender" />
</logger>

<logger name="net.sf.navigator" additivity="false">
    <level value="error" />
    <appender-ref ref="StrutsAppender" />
</logger>

<logger name="org.displaytag" additivity="false">
    <level value="error" />
    <appender-ref ref="StrutsAppender" />
</logger>

<logger name="org.apache.commons">
    <level value="warn" />
</logger>

<root>
    <priority value="debug" />
    <appender-ref ref="FileAppender"/>
</root>

```

3. If profiling is turned on and should be recorded, add the following configuration to the log4j.xml file:

```

<appender name="ProfileAppender"
class="org.apache.log4j.RollingFileAppender">
<param name="File" value="log/profile.log" />
    <param name="Append" value="false" />
    <param name="MaxBackupIndex" value="10" />
    <layout class="org.apache.log4j.PatternLayout">
<param name="ConversionPattern" value="%d{dd MMM yyyy hh:mm:ss
a} %-5p [%c%M] %m%n" />
    </layout>
</appender>
<logger name="REDACTEDpharmacy.peps.common.utility.profile"
additivity="false">
    <level value="info" />
    <appender-ref ref="ProfileAppender" />
</logger>

```

4. Restart the Deployment Server to load the Log4j configuration.

3.5.7 Site Deployment Configuration

The PPS-N deployment files must be altered to configure the WebLogic deployment descriptor and KAAJEE configuration for each site. The first two sub sections detail configuring these settings. The third sub section details the site configuration properties changed at local and national.

After configuring the application, the result should be EAR deployment files with the exact same file structure as delivered, but with site specific configurations made. The `kaajeeConfig.xml`, and `weblogic.xml` files now have the correct values for deployment. Use the original files located on the disk distributed with the PPS-N v1.0 Version Description Document to verify that the file structure is the same.

3.5.7.1 Site Number property

Prior to deploying the ear file a file must be created and placed on the managed server's class path. This file contains a single line of text that identifies an installation's site number.

- Create a file named `REDACTEDpharmacy.peps.siteConfig.properties`. This file will need to be placed on the managed server's class path.
- Edit the file, adding [or modifying] the following line:
`site.number=<num>`
 Replace `<num>` with the site Vista Instance number. E.g. 521 (for Birmingham) or 999 for the National instance.

3.5.7.2 WebLogic Deployment Descriptor

Within the PPS-N deployment file, the `weblogic.xml` deployment descriptor found within the WAR file must be updated to identify the WebLogic administrative user KAAJEE should operate under. To set the user KAAJEE should operate under, follow these steps:

1. Copy the `PPSN-1.ear` file to a chosen target folder. No particular location is required.
2. Unzip the `PPSN-1.ear` file.
3. Unzip the `PRE.war` file.
4. Open the `WEB-INF/weblogic.xml` file for editing. This file was contained within the `PRE.war` file.
5. Change the `run-as-principal-name` element value to the correct WebLogic administrative user under which KAAJEE should operate. For example:

```
<run-as-principal-name>developer</run-as-principal-name>
```
6. Save the changes and close the `weblogic.xml` file.
7. Repackage (zip) the `PRE.war` file. The updated file must be located at the root folder of the directly under the `PPSN-1.ear` file. Delete the files unzipped in Step 3.
8. Repackage (zip) the `PPSN-1.ear` file. Delete the files unzipped in Step 2.

3.5.7.3 KAAJEE Station Numbers

Within National PPS-N deployment files, the `kaajeeConfig.xml` file found within the `PRE.war` file must be updated to identify the KAAJEE station numbers available for login. To set the KAAJEE station numbers, follow these steps:

1. Copy the `PPSN-1.ear` file to a chosen target folder. No particular location is required.
2. Unzip the `ear` file.
3. Unzip the `PRE.war` file.
4. Open the `WEB-INF/kaajeeConfig.xml` file for editing. This file was contained within the `PRE.war` file.
5. Change the `station-number` elements values to the correct KAAJEE station numbers. Multiple station numbers can be configured by adding multiple `station-number` elements. For example:

```
<station-number>500</station-number>
```
6. Save the changes and close the `kaajeeConfig.xml` file.
7. Repackage (zip) the `PRE.war` file. The updated file must be located at the root folder of the directly under the `PPSN-1.ear` file. Delete the files unzipped in Step 3.
8. Repackage (zip) the `PPSN-1.ear` file. Delete the files unzipped in Step 2.

3.5.8 Install SQL Load Script Files

The database is reset to a known starting point as part of a user performing the migration process. This is done by the J2EE application running a series of SQL scripts to drop the old data and load the starting data when the user chooses the start migration activity from the PPS-N GUI. These SQL script files must be placed in the `config` directory of the WebLogic domain. There are 17 files in total, `PPSNEPLRefreshData.sql`, `RefreshEPL_DB.sql` and 15 files named `PPSEPLRefreshDB1.sql` through `PPSNEPLRefreshDB15.sql`. These are located in the `PPSNEPLRefreshDb-1.zip` file located on the delivered CD.

3.5.9 Deployment

The following steps detail the deployment of the PPS-N application. All previous sections must be complete prior to proceeding with the deployment. In addition, the Deployment Server and its WebLogic domain must be restarted to load the changed configuration. Please refer to Section 3.3, Section 3.3.2.3, and Section 3.5 for instructions concerning these configuration items.

After successfully modifying the PPS-N deployment file in Section 3.5.7, repeat the following steps to deploy the application at all National PPS-N instances.

1. Open and log into the WebLogic console, using an administrative user name and password. The WebLogic console is located at: `http://<Deployment Machine>:7001/console`.
2. Within the `Domain Structure` panel in the left column of the WebLogic console, click the `Deployments` node. For reference, see Figure 3-18.

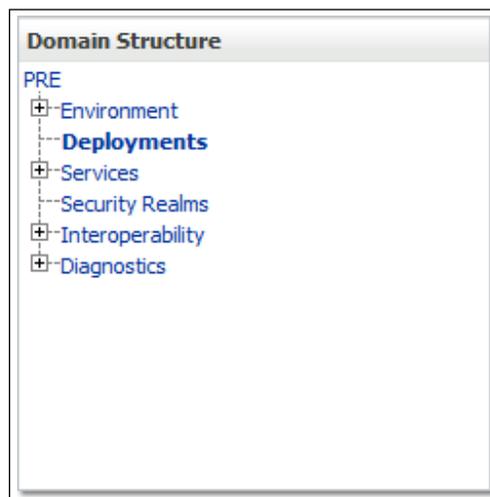


Figure 3-18. Deployments

- Click **Install** found in the **Deployments** panel in the right column of the WebLogic console. For reference, see Figure 3-19.

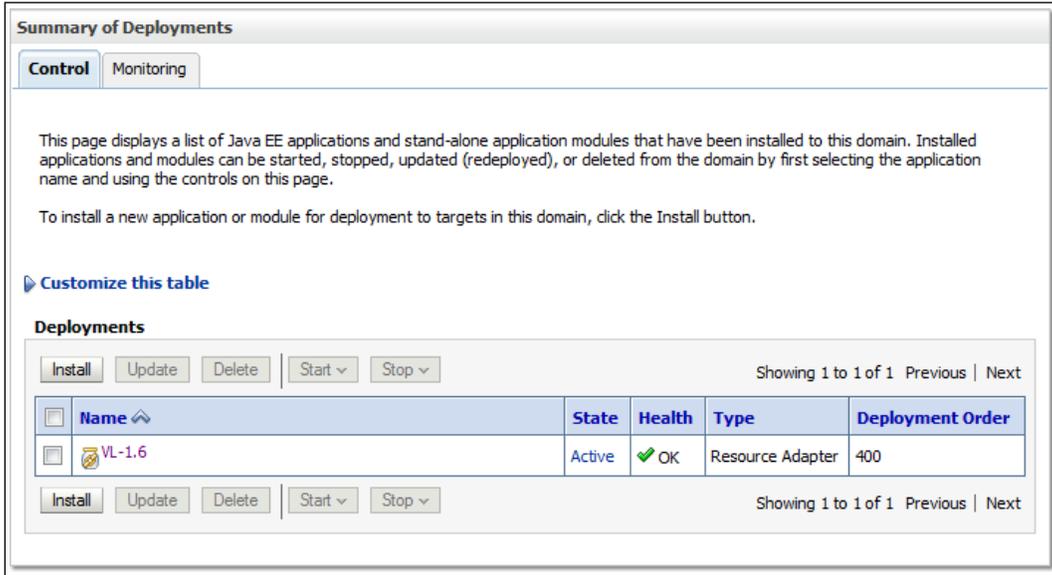


Figure 3-19. Install Deployment

- WebLogic will now display the panel **Install Application Assistant** in the right column of the console, where the location of the PPS-N deployment will be found. For reference, see Figure 3-20.

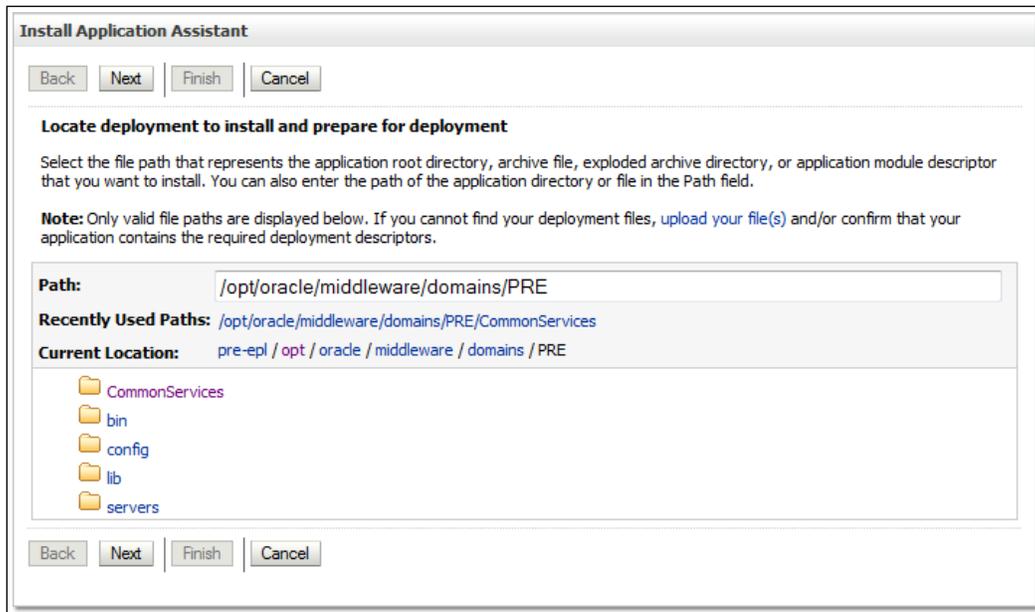


Figure 3-20. Install Application Assistant

5. Select the site-specific archive for the PPS-N deployment.
 - a) If the PPS-N deployment has already been transferred to the Deployment Machine, navigate to the deployment file location using the links and file structure displayed within the Location panel within the Install Application Assistant in the right column of the console. For reference, see Figure 3-21.

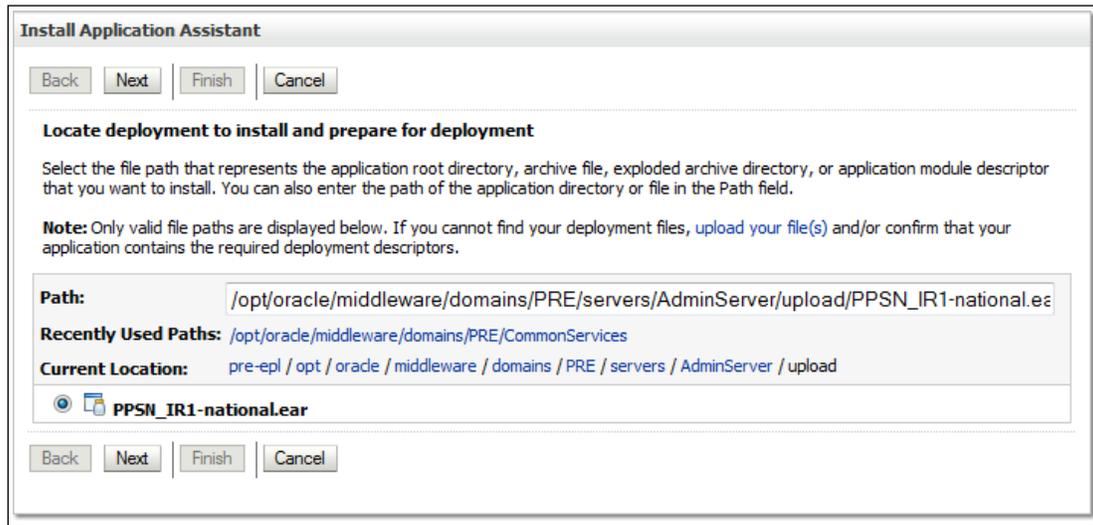


Figure 3-21. Locate Deployment to Install and Prepare for Deployment

- b) If the PPS-N deployment has not been transferred to the Deployment Machine:
 - (1) Click on the `upload your file(s)` link in the Install Application Assistant panel in the right column of the console. For reference, see Figure 3-21.
 - (2) Click the `Deployment Archive Browse` to use the `Choose file` dialogue to select the `Deployment Archive` to deploy.

- (3) Click **Next** in the **Upload a Deployment to the admin server** panel in the right column of the **WebLogic** console to return to the **Locate deployment to install and prepare for deployment** panel within the **Install Application Assistant** in the right column of the console. For reference, see **Figure 3-22**.

The screenshot shows a window titled "Install Application Assistant". At the top, there are four buttons: "Back", "Next", "Finish", and "Cancel". Below this is a section titled "Upload a Deployment to the admin server". A text box contains the instruction: "Click the Browse button below to select an application or module on the machine from which you are currently browsing. When you have located the file, click the Next button to upload this deployment to the Administration Server." Below the instruction, there is a label "Deployment Archive:" followed by a text input field containing "C:\tmp\PPSN_IR1-national.ear" and a "Browse..." button. Below this is another section titled "Upload a deployment plan (this step is optional)". A text box contains the instruction: "A deployment plan is a configuration which can supplement the descriptors included in the deployment archive. A deployment will work without a deployment plan, but you can also upload a deployment plan archive now. This deployment plan archive will be a directory of configuration information packaged as a .jar file. See related links for additional information about deployment plans." Below the instruction, there is a label "Deployment Plan Archive:" followed by an empty text input field and a "Browse..." button. At the bottom of the window, there are four buttons: "Back", "Next", "Finish", and "Cancel".

Figure 3-22. Upload a Deployment to the admin server

6. Once the PPS-N deployment is located and selected, click **Next**.

7. WebLogic will now display the panel **Choose targeting style** within the **Install Application Assistant** in the right column of the console. For reference, see Figure 3-23.

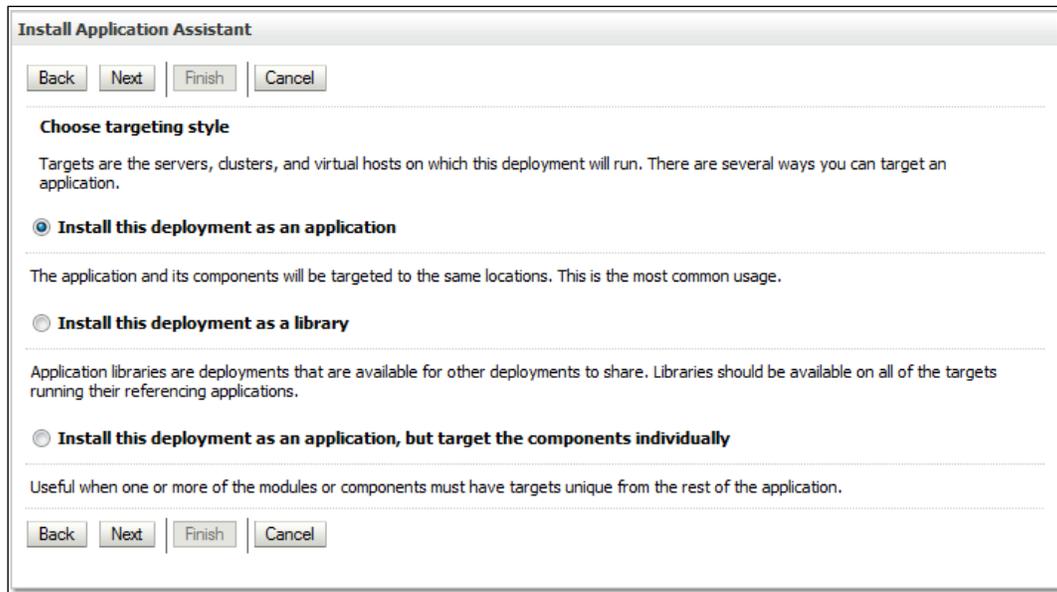


Figure 3-23. Choose Targeting Style

8. For **Choose targeting style**, leave the default value selected, **Install this deployment as an application**.
9. Click **Next**.

10. WebLogic will now display the panel `Select deployment targets` within the `Install Application Assistant` in the right column of the console, where the `Deployment Server` will be selected as the target in the next step. For reference, see Figure 3-24.

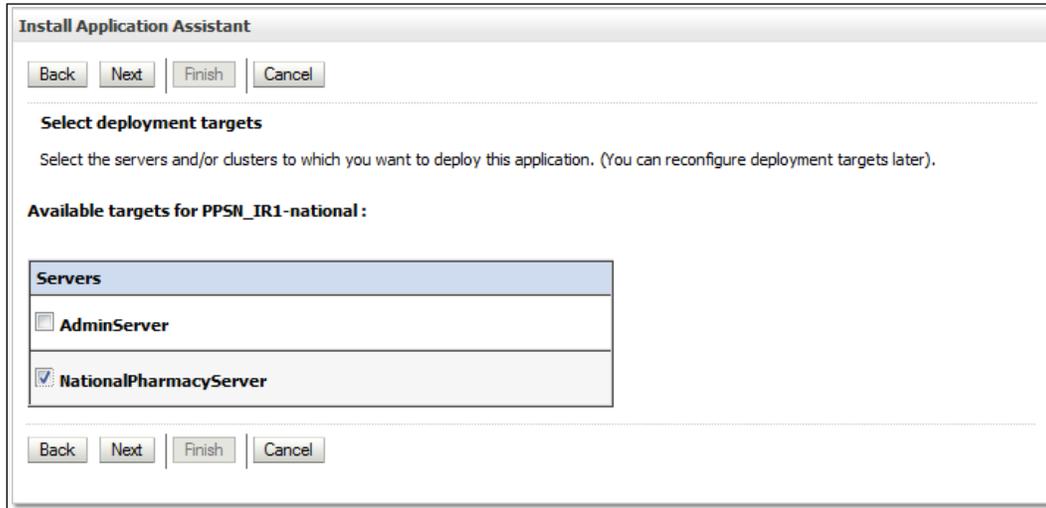


Figure 3-24. Select Deployment Targets

11. For the Target, select the Deployment Server. For example, `NationalPharmacyServer`.
12. Click Next.

13. WebLogic will now display the panel `Optional Settings` within the `Install Application Assistant` in the right column of the console, where the name of the deployment and the copy behavior are chosen. For reference, see Figure 3-25.

Install Application Assistant

Back Next Finish Cancel

Optional Settings

You can modify these settings or accept the defaults

General

What do you want to name this deployment?

Name: PPSN_IR1-national

Security

What security model do you want to use with this application?

DD Only: Use only roles and policies that are defined in the deployment descriptors.

Custom Roles: Use roles that are defined in the Administration Console; use policies that are defined in the deployment descriptor.

Custom Roles and Policies: Use only roles and policies that are defined in the Administration Console.

Advanced: Use a custom model that you have configured on the realm's configuration page.

Source accessibility

How should the source files be made accessible?

Use the defaults defined by the deployment's targets

Recommended selection.

Copy this application onto every target for me

During deployment, the files will be copied automatically to the managed servers to which the application is targeted.

I will make the deployment accessible from the following location

Location: /opt/oracle/middleware/domains/PRE/servers/Admin

Provide the location from where all targets will access this application's files. This is often a shared directory. You must ensure the application files exist in this location and that each target can reach the location.

Back Next Finish Cancel

Figure 3-25. Optional Settings

14. Enter the Name for the deployment. For example, `PPSN_IR1-national`.
15. Verify that the following default option for `Security` is selected:
- DD Only: Use only roles and policies that are defined in the deployment descriptors.
16. Verify that the following default option for `Source accessibility` is selected:
- Use the defaults defined by the deployment's targets.
17. Click `Next`.

18. WebLogic will now display the panel Review your choices and click Finish within the Install Application Assistant in the right column of the console, which summarizes the steps completed above. For reference, see Figure 3-26.

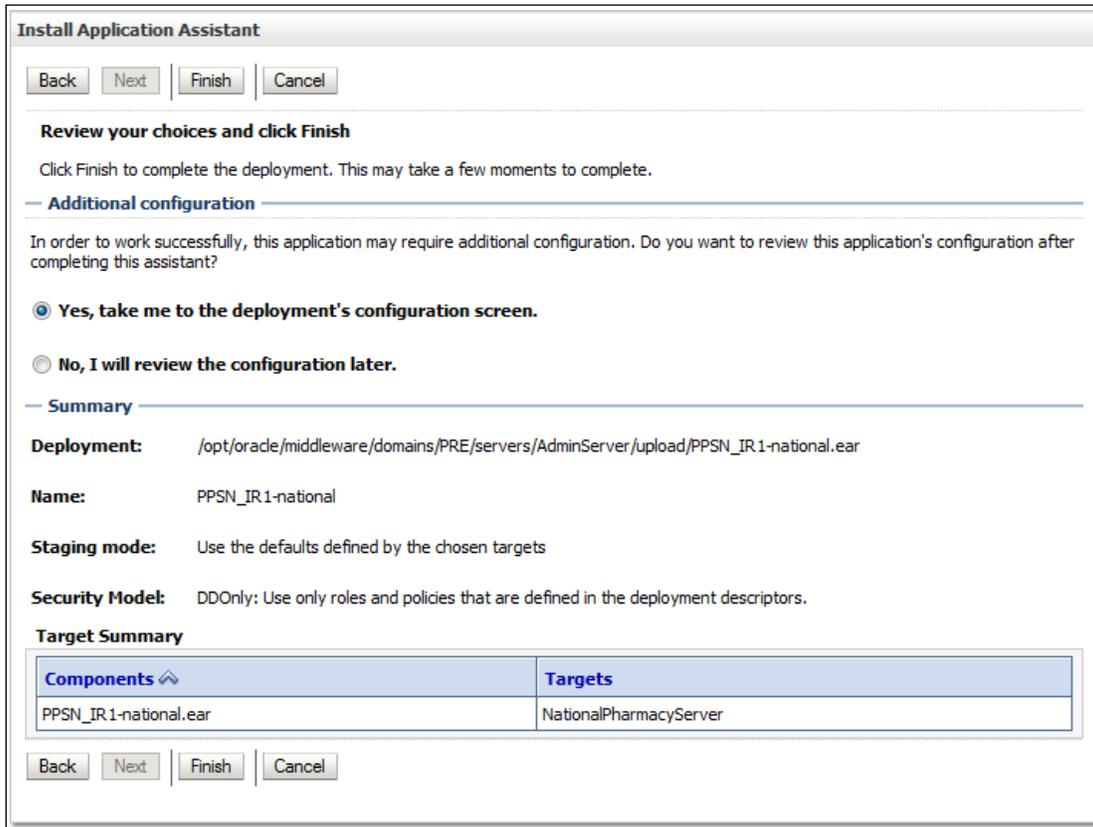


Figure 3-26. Review Your Choices and Click Finish

19. Verify that the values match those entered in Steps 5 through 18.
20. For Additional configuration, leave the default value Yes, take me to the deployment's configuration screen set.
21. Click Finish.

22. WebLogic will now display the panel **Settings** for **PPSN_IR1-national** in the right column of the console, where the values previously entered are available as well as a setting to change the deployment order. For reference, see Figure 3-27.

Settings for PPSN_IR1-national

Overview | Deployment Plan | Configuration | Security | Targets | Control | Testing | Monitoring | Notes

Save

Use this page to view the general configuration of an Enterprise application, such as its name, the physical path to the application files, the associated deployment plan, and so on. The table at the end of the page lists the modules (such as Web applications and EJBs) that are contained in the Enterprise application. Click on the name of the module to view and update its configuration.

Name: PPSN_IR1-national The name of this Enterprise Application. [More Info...](#)

Path: /opt/oracle/middleware/domains/PRE/servers/AdminServer/upload/PPSN_IR1-national.ear The path to the source of the deployable unit on the Administration Server. [More Info...](#)

Deployment Plan: (no plan specified) The path to the deployment plan document on Administration Server. [More Info...](#)

Staging Mode: (not specified) The mode that specifies whether a deployment's files are copied from a source on the Administration Server to the Managed Server's staging area during application preparation. [More Info...](#)

Security Model: DDOnly The security model that is used to secure a deployed module. [More Info...](#)

Deployment Order: An integer value that indicates when this unit is deployed, relative to other deployable units on a server, during startup. [More Info...](#)

Deployment Principal Name: A string value that indicates what principal should be used when deploying the file or archive during startup and shutdown. This principal will be used to set the current subject when calling out into application code for interfaces such as ApplicationLifecycleListener. If no principal name is specified, then the anonymous principal will be used. [More Info...](#)

Save

Modules and Components

Showing 1 to 1 of 1 Previous | Next

Name	Type
PPSN_IR1-national	Enterprise Application

Showing 1 to 1 of 1 Previous | Next

Figure 3-27. Settings for PRE-1.0-national

23. Leave all the values as defaulted by WebLogic and click **Save**.

24. Within the `Domain Structure` panel in the left column of the WebLogic console, click the `PRE > Deployments` node. For reference, see Figure 3-28.

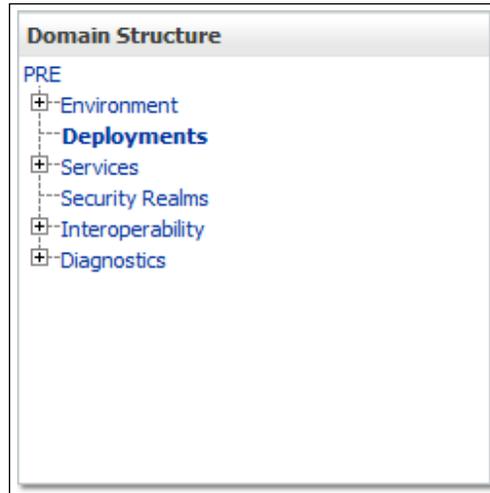


Figure 3-28. Domain Structure

25. WebLogic will now display the panel `Summary of Deployments` in the right column of the console, where all deployments for the WebLogic domain are listed. For reference, see Figure 3-29.

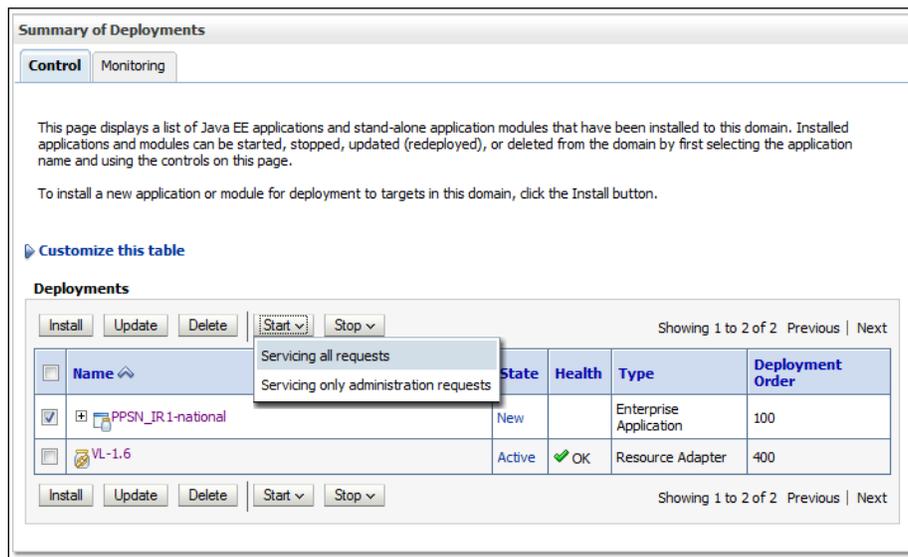


Figure 3-29. Summary of Deployments

26. Select the previously deployed `PPSN-1.0` deployment, and click `Start`, selecting `Servicing all requests` from the drop-down list box. Please note this may take an extended amount of time (two or more minutes) depending on server hardware resources.

27. WebLogic now returns to the Summary of Deployments panel in the right column of the console. For reference, see Figure 3-30.

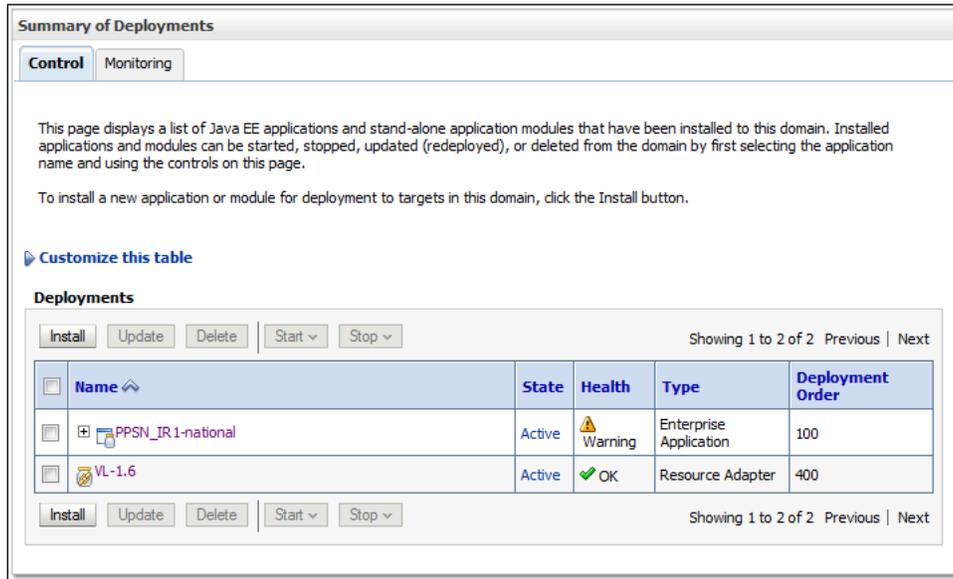


Figure 3-30. Summary of Deployments - PPS-N Deployment Active

28. Verify that the State of the current PPS-N deployment is Active. For example, PPSN_IR1-national is in the Active state in Figure 3-30. The browser window may need to be refreshed multiple times before the deployment reaches the Active state.

3.5.10 Installation of FDB_Images

FDB_Images is the name of the deployment that contains the images utilized by PPSN for the display of images associated with various items within the application. FDB_Images is an open-directory type deployment that needs to be added to the server so that PPSN works correctly. As a separate and open-directory deployment, this allows the modification of the image contents within the deployment, such as adding monthly image updates from First Data Bank.

3.5.10.1 Deployment of FDB_Images.zip

Deploying the FDB_Images directory consists of the following:

Unzip the FDB_Images.zip archive to an appropriate location on the server. This location must be readable by the user account used by Web Logic. This is the folder where the FDB images that are displayed in the PPSN are retrieved. Any application (such as DATUP) and any administrator that updates the images should put the FDB images in this folder.

- 1.
2. Open a web browser to the WebLogic console
3. Click on the Deployments link
4. Click Install button

5. Navigate to the directory that contains `FDB_Images`. E.g. `/opt`. It should have an entry listed as “FDB_Images (open directory).”
6. Click on “FDB_Images (open directory)” radio button to its left.
7. Click the Next button.
8. Click “Install this deployment as an application”
9. Click Next
10. Select the server(s) this should be deployed to, e.g. “NationalPharmacyServer”
11. Click Next.
12. Optional settings:
 - Name: “FDB_Images” - required. This is the “*deployment name*”
 - Security, click “DD Only: Use only roles...”
 - Source accessibility, click “I will make the deployment accessible from the following location”. The location listed should suffice. This tells WebLogic to use this directory directly and to *not* copy it, so adequate permissions will be needed on the directory so that it and its contents are readable to the web.
13. Click Next.
14. Click “Yes, take me to the deployment’s configuration screen”
15. Click Finish.
16. On the configuration screen, change Deployment Order to “200”
17. Click Save.

If a different *deployment name* is used, you will need to account for this by specifying the name in the PPS-N configuration file’s `FDBImageLocation` element. See Section 7, PPS-N Configuration File.

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4 CHECKLIST

4.1 External Connectivity

PPS-N connects to some resources that may be restrained by firewall or other security configurations.

4.1.1 STS

Outbound connections are made to the STS service, as such security setting must be altered to allow outbound connections from the PPS-N environment to the respective URL.

Environment	URL
Staging	REDACTED
Pre-production / production	REDACTED

4.2 Database Connectivity

Ensure connectivity to the following datasources:

- PPSNEPL
- FDB-DIF
- FSS

4.3 Database Population

The database is populated by means of section 3.3.2.2 or 3.3.2.3

4.4 Database Permissions

Permissions have been set on the PPSNEPL account according to section 3.3.3.

4.5 Dependent WebLogic Deployments or Configurations

- VistAlink and KAAJEE are configured and working
- FDB_Images folder must be available as a deployment, see section 3.5.10

4.6 PPS-N Configuration

Within the PPS-NConfig.xml file, note the following:

- The value of the NationalPort element must match the port number the WebLogic managed server is using
- The value of NDFProxyUserIEN must be an existing and valid proxy user on the NDF system

4.7 Site Number

The file, REDACTEDpharmacy.peps.siteConfig.properties, must be created and an appropriate value set, see section 3.5.7.1.

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5 FUNCTIONALITY TEST

The following instructions define a method of verifying the installation performed in Section 3. These steps are not required to complete the PPS-N installation; they provide a way to verify that the installation is complete and operational.

5.1 Assumptions

Prior to completing any of the deployment verification instructions in the remaining section of this document, the following assumption must be met: The PPS-N Web interface is accessed using Internet Explorer, Version 9.

5.2 Deployment Verification

The following instructions detail how to verify that the PPS-N system was deployed successfully. The instructions do not verify all functionality of the application; they are only a simple way to show that the deployment was successful.

For each deployment environment, follow these steps:

18. Store the `SampleNDC.csv` file in a directory on the computer that will run the Web browser.
19. Open a Web browser.
20. Navigate to `http://<Deployment Machine>:<Deployment Server Port>/PRE/`
21. Login using the following username: `PNM1N1`
22. Verify that the PPS-N home page appears.
23. Select the `Migrate` tab. Verify the `Migration Start` page appears.
24. Start a migration as follows:
 - Select the `SampleNDC.csv` file stored in step 1.
 - Select `Start Migration` button.
25. Wait for a partial migration (Drug Units and Dispense Units only) to complete. Press `Stop` button if migration time exceeds two minutes.
26. On `Migration Report` page, review Drug Unit and VA Dispense Unit detailed reports by selecting the appropriate links.

If the Web pages do not appear or the flow is not fully operational, verify that all the steps listed in Section 3 were completed correctly.

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6 BACKOUT PROCEDURES

The current PPS-N Application is hosted on the NDF Management Server. When PPS-N goes online; the users will simply stop using the MUMPS user interface in the NDF Management Server and begin using the web interface to manage drug items. As new drugs items are added into PPS-N and existing items are updated, the PPS-N java application will be automatically updating the NDF Management System in the background.

If, at any time, the users decide to stop using the PPS-N web application and go back to using the NDF Management user interface, it is simply a matter of stopping using the web service and starting using the NDF interface. Since the PPS-N web interface keeps the NDF Management System updated in real-time then no rollback procedure is to be performed.

There is already a procedure in place that is used to back up the NDF Management Server and that process will continue as is with no changes. The periodic backup of the PPS-N EPL database is described in the Productions Operational Manual.

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7 PPS-N CONFIGURATION FILE

This configuration file (PPS-NConfig.xml) needs to be in the directory structure of the application server. It must be in the /config directory of the deployed domain (i.e. ../domains/PRE/config/).

```
<?xml version = "1.0" encoding = "UTF-8"?>
<PPS-NConfigFile>
  <NationalPort>8021</NationalPort>
  <TransactionTimeout>60</TransactionTimeout>
  <NDFDivision>521</NDFDivision>
  <NDFProxyUserIEN>355</NDFProxyUserIEN>
  <ConnectionSpecName>DUZ</ConnectionSpecName>
  <RPCTimeout>60000</RPCTimeout>
  <FDBImageLocation>/FDB_Images/</FDBImageLocation>
</PPS-NConfigFile>
```

Please note that the `FDBImageLocation` element is optional, as a default value of “/FDB_Images/” is used if it is not specified.

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8 TROUBLESHOOTING

8.1 In an SSL-enabled environment, the application's responsiveness is extremely slow

When using an Apache web server for SSL, ensure the `KeepAlive` directive is set to `ON`. By default, the installation sets this value to `OFF`.